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*DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ*

<u>L27</u>	11 and L25	12	<u>L27</u>
<u>L26</u>	11 and L25	12	<u>L26</u>
<u>L25</u>	water soluble particle	622	<u>L25</u>
<u>L24</u>	11 same L23	13	<u>L24</u>
<u>L23</u>	13 near2 14	7985	<u>L23</u>
<u>L22</u>	13 near3 14	10297	<u>L22</u>
<u>L21</u>	13 near5 14	14026	<u>L21</u>
<u>L20</u>	11 same L18	10	<u>L20</u>
<u>L19</u>	11 and L18	147	<u>L19</u>
<u>L18</u>	13 near 14	4704	<u>L18</u>
<u>L17</u>	15 and L13 and 19 and polishing pad	21	<u>L17</u>
<u>L16</u>	15 and L13 and 19 [ti]	922	<u>L16</u>
<u>L15</u>	15 and L13 and 19	6380	<u>L15</u>
<u>L14</u>	15 and L13	7993	<u>L14</u>
<u>L13</u>	rubber near (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	106244	<u>L13</u>
<u>L12</u>	rubber and (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	207409	<u>L12</u>
<u>L11</u>	16 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	16 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	11 and L5 and (composition or composit)	5278	<u>L8</u>
<u>L7</u>	11 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	11 and L5	6229	<u>L6</u>
<u>L5</u>	13 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

## EXAMPLE 9

Following those procedures set forth in Example 8, but using the amounts of reactants shown in Table 2, 303.5 gms. of product are produced.

## EXAMPLE 10

5.0 gms. (0.02 moles) of MDI in 35.0 gms. toluene are added to a reactor vessel followed by the dropwise addition of 17.3 gms. (0.02 moles) of NP-10 Diol as used in Example 8 in 25.0 gms. toluene, at 60° C. After one hour the reaction mixture is transferred to a graduated addition funnel. 80.0 gms. (0.01 moles) PEG 8000 in 217.0 gms. toluene are refluxed to azeotrope off water, followed by cooling to 60° C. The diol/MDI reaction mixture is added dropwise and the reaction is continued overnight at 56° C. The mixture is heated to 100° C. and one drop of DBTD catalyst is added. Following solvent

drophobe reactants of varying proportions to provide polyurethane comb polymers of various molecular weight, HLB and molecular structure. Using those reactants set forth in Table 3, the following procedures produce polyurethane comb polymers varying in molecular weight, HLB and molecular structure, based on the previously described parameters a, b' and c, as identified in Table 3.

The experimental procedure involves charging the reaction vessel with the polyethylene glycol and hydrophobe reactant in toluene solvent. The mixture is brought to reflux to azeotropically remove any water present. The mixture is cooled to 60° and DBTD catalyst is added followed by the polyisocyanate. The reaction mixture becomes very viscous after a few hours. After stirring at 60° C. for approximately four days the toluene solvent is evaporated off at atmospheric conditions, to provide the polyurethane comb polymer.

TABLE 3

Examples 11-30									
Example	PEG	Reactant (wt. %)			b'	c	a b + c	HLB	Molecular Weight
		DIOL	DIISOCYANATE						
11	3350(81.41)	NP-10(11.89)	TDI(6.70)		2.4	8	0.95	18.00	49,378
12	3350(66.83)	NP-10(27.68)	TDI(5.50)		2.4	8	0.95	18.29	60,154
13 <sup>1</sup>	8000(91.96)	NP-10(4.84)	TDI(3.19)		2.8	23	0.98	19.09	352,883
14 <sup>1</sup>	8000(86.23)	NP-10(9.58)	TDI(4.18)		1.8	37	0.99	18.63	284,631
15	14000(92.89)	NP-10(4.89)	TDI(2.22)		1.9	11	0.95	19.29	165,448
16	3350(89.54)	C10(3.10)	TDI(7.36)		2.4	8	0.95	18.12	44,898
17	3350(89.49)	C16(3.71)	TDI(6.79)		2.7	7	0.95	18.07	48,662
18	8000(93.77)	C18(2.74)	TDI(3.49)		2.1	8	0.94	18.87	78,204
19	3350(89.89)	NP(1.97)	MDI(8.13)		4.9	7	0.97	18.10	99,377
20	3350(89.13)	NP(3.35)	IPDI(7.52)		2.2	8	0.96	18.03	65,774
21	3350(89.03)	NP(4.21)	TDI(6.76)		2.7	7	0.95	18.07	48,914
22	1000(65.16)	NP(15.67)	TDI(19.17)		2.1	6	0.93	14.00	12,059
23	1000(78.65)	NP(5.78)	TDI(15.57)		4.6	2	0.91	16.09	11,302
24	3350(93.73)	NP(0.91)	TDI(5.36)		9.9	10	0.99	18.80	321,666
25	3350(88.60)	NP(5.18)	TDI(6.21)		2.0	2	0.81	18.04	11,940
26	8000(96.07)	NP(1.18)	TDI(2.76)		4.0	25	0.99	19.29	624,576
27	14000(96.22)	NP(1.65)	TDI(2.13)		2.2	23	0.98	19.35	400,141
28	14000(97.16)	NP(1.10)	TDI(1.75)		2.7	6	0.94	19.50	156,108
29	8000 <sup>2</sup> (80.00)	NP-40 <sup>3</sup> (17.03)	TDI(2.97)		2.1	8	0.94	15.03	91,667
30	2025 <sup>3</sup> (54.95)	NP(37.65)	TDI(7.40)		2.4	7	0.94	16.59	36,849

<sup>1</sup>based on PEG having a weight average molecular weight of 7,662.

<sup>2</sup>PEG copolymerized with 25% polypropylene glycol.

<sup>3</sup>PEG copolymerized with 10% polypropylene glycol.

evaporation, 102.3 gms. of product are provided.

TABLE 2

Examples 1-10						
Example	Reactants (gms)			Product		
	PEG 8000	DIOL <sup>1</sup>	MDI	Solvent <sup>2</sup> (gms)	(gms)	Cloud point (°C.)
1	40	13.0	2.5	390	57.3	ND
2 <sup>2</sup>	80	26	5.0	300	ND	ND
3 <sup>2</sup>	111.5	12.2	5.0	240	132.3	84.2*
4 <sup>2</sup>	111.5	12.2	5.0	297	133.0	90*
5 <sup>3</sup>	99.6	10.8	5.0	235	124.9	ND
6 <sup>3</sup>	99.6	27.5	5.0	265	129.9	68*
7 <sup>2</sup>	80	44	5.0	385	138.5	74*
8 <sup>2</sup>	80	17.3	5.0	300	103.6	60*
9 <sup>2</sup>	240	51.9	15.0	505	303.5	ND
10 <sup>2</sup>	80	17.3	5.0	277	102.3	ND

ND — not determined

<sup>1</sup>Examples 1, 6 and 7 use NP-40 Diol having a weight average molecular weight of 2,548, as the hydrophobe reactant. All other examples pertain to NP-10 Diol as hydrophobe reactant having a weight average molecular weight of 862, except Example 2 which is based on NP-10 Diol ethoxylated to a weight average molecular weight of 2,151.

<sup>2</sup>Using 1 drop DBTD catalyst

<sup>3</sup>Using 2 drops DBTD catalyst

## EXAMPLES 11-30

These examples demonstrate reactions involving a variety of polyisocyanate, polyethylene glycol and hy-

## EXAMPLES 31-38

These examples demonstrate procedures for producing polyurethane comb polymers derived from grafting hydrophobe reactants onto polyethylene glycol followed by reaction with polyisocyanate. Examples 31-33 describe grafting procedures while Examples 34-38 describe the production of polyurethanes.

## EXAMPLES 31-33

Using the amount of reactants and catalysts set forth in Table 4, PEG 14,000 is grafted with hexadecene to provide 3, 5 and 7 weight percent hexadecyl grafts on the PEG product. The procedure entails charging the PEG to a reactor vessel followed by addition of hexadecene and di-t-butyl peroxide catalyst. The reaction proceeds for 5 hours at from 140° to 150° C. with stirring.

TABLE 4

Examples 31-33			
Example	Reactants (gms)		Catalyst (gms)
	PEG 14,000	Hexadecene (wt. %)	
31	291.0	9.0 (3%)	0.6
32	285	15.0 (5%)	1.0

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Term	Documents
(25 AND 1).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	12
(L1 AND L25).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	12

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L27

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-continued

Designation	Description
NP-10 Diol	$\text{C}_9\text{H}_{19}\text{---}\langle\text{---}\rangle\text{O---}(\text{CH}_2\text{CH}_2\text{O})_7\text{---CH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH};$ wherein 1 is an average of 10
NP-40 Diol	$\text{C}_9\text{H}_{19}\text{---}\langle\text{---}\rangle\text{O---}(\text{CH}_2\text{CH}_2\text{O})_7\text{---CH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH};$ wherein 1 is an average of 40.
PEG	Polyethylene glycol
TDI	Toluene diisocyanate

## EXAMPLES 1-10

These examples demonstrate the preparation of polyurethane comb polymers of the present invention from MDI as organic polyisocyanate, PEG 8000 (a polyethylene glycol having a weight average molecular weight of 7,967 and ethoxylated NP-10 Diol or NP-40 Diol as the hydrophobe reactant, in toluene as solvent.

## EXAMPLE 1

40.0 gms. (0.005 moles) of PEG 8000 and 240.0 gms. toluene are heated to reflux to azeotropically remove any water present. The solution is cooled and placed in a graduated addition funnel. 2.5 gms. (0.01 moles) of MDI in 50.0 gms. toluene are charged to a reaction vessel. The material is heated to 50° C. The PEG/toluene solution is added over 2½ hours at 50° C., followed by a rinse with 30.0 gms. toluene and the reaction mixture is heated for approximately 15 minutes. 13.0 gms. (0.005 moles) of NP-40 Diol are provided to the reaction mixture over a period of 1 hour. The reaction is stirred at from 50° to 60° C. overnight. The toluene solvent is stripped off to recover 57.3 gms. product.

## EXAMPLE 2

Following procedures similar to those described in Example 1, 80.0 gms. (0.01 moles) of PEG 8000 in 200.0 gms. toluene are charged to a reaction vessel containing 5.0 gms. (0.02 moles) in 60.0 gms. toluene for a period of 1 hour. The reaction mixture is held at 55° C. overnight. 40 gms. of toluene are added and 26.0 gms. (0.012 moles) of NP-10 Diol ethoxylated to a weight average molecular weight of 2,151, in 40.0 gms. toluene, are charged for a period of over 1 hour. The reaction proceeds for 1 hour, followed by the addition of one drop of DBTD catalyst, and the reaction is continued to completion.

## EXAMPLE 3

111.5 gms. (0.014 moles) PEG 8000 and 12.2 gms. (0.014 moles) of NP-10 Diol, having a weight average molecular weight of 862, in 210 gms. toluene are heated to reflux to azeotrope off excess water. The mixture is cooled to 50° C. and 5.0 gms. (0.02 moles) of MDI in 30.0 gms. toluene are added dropwise over one hour. One drop of DBTD catalyst is added and the reaction proceeds at 50° C. overnight. Toluene solvent is evaporated off to provide 132.3 gms. product having a cloud point of 84.2° C. A 1% solution of the product is soluble in water with a slight haze.

## EXAMPLE 4

115.5 gms. (0.014 moles) of PEG 8000 and 230.0 gms. toluene are azeotroped to remove water, followed by cooling to 50° C. 5.0 gms (0.02 moles) of MDI in 33.0 gms. toluene are added dropwise for over 45 minutes. After one hour reaction time one drop of DBTD catalyst is added followed by 12.2 gms. (0.014 moles) of NP-10 Diol as used in Example 3. After several days reaction at 52° C. the toluene is evaporated off to provide 130.0 gms. of product providing a 1% aqueous solution having a slight haze at room temperature and a cloud point of 90° C.

## EXAMPLE 5

The procedure set forth in Example 4 is repeated using those reactants and amounts set forth in Table 2 except that two drops of DBTD catalyst are provided to produce 124.9 gms. of product.

## EXAMPLE 6

The experimental procedures of Example 5 are repeated for those reactants and amounts set forth in Table 2, except NP-40 Diol in Example 1 is used in place of the NP-10 Diol, to produce 129.9 gms. of product. The product is water soluble providing a slight haze at room temperature for 1% solution, having a cloud point of 68° C.

## EXAMPLE 7

80.0 gms. (0.01 moles) of PEG 8000 and 185.0 gms. toluene are heated to azeotrope off any water, followed by transfer to a graduated addition funnel. 5.0 gms. (0.02 moles) of MDI in 40.0 gms. toluene are added to a reaction vessel which is heated to 50° C. The PEG solution is added for a period of one hour at 55° C., and the reaction proceeds for 1½ hours. This solution is added dropwise for a period of 1½ hours to 44.0 gms. (0.02 moles) of NP-40 Diol as used in Example 6, at a temperature of 60° to 65° C. After several days reaction at 58° C. the toluene is evaporated off to provide 138.5 gms. of product which is water soluble providing a 1% solution having a slight haze at room temperature and a cloud point of 74° C.

## EXAMPLE 8

80.0 gms. (0.01 moles) PEG 8000 in 150.0 gms. toluene are azeotroped to remove any water, followed by cooling and adding to a feed graduate funnel, along with 40 gms. toluene rinse. 5.0 gms. (0.02 moles) of MDI in 65.0 gms. toluene are added to a reaction vessel along with one drop DBTD catalyst. The reaction mixture is heated to approximately 60° C. and the PEG solution is added dropwise. After one hour reaction, the mixture is transferred to another feed graduate funnel along with 40 gms. toluene rinse. 17.3 gms. (0.02 moles) of NP-10 Diol as used Example 3 in 85.0 gms. toluene are azeotroped to remove any water. The diol solution is cooled to 60° C. and two drops of DBTD catalyst is added along with the dropwise addition of PEG/MDI reaction mixture. The reaction proceeds overnight at 60° C. providing 103.6 gms. of product which is water soluble providing a 1% aqueous solution having a slight haze at room temperature and a cloud point of 60° C.

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L26: Entry 1 of 12

File: PGPB

Mar 27, 2003

PGPUB-DOCUMENT-NUMBER: 20030060138  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20030060138 A1

TITLE: Polishing pad for semiconductor wafer and polishing process using thereof

PUBLICATION-DATE: March 27, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hasegawa, Kou	Mie		JP	
Hosaka, Yukio	Mie		JP	

US-CL-CURRENT: 451/41

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWC

☐ 2. Document ID: US 20020173231 A1

L26: Entry 2 of 12

File: PGPB

Nov 21, 2002

PGPUB-DOCUMENT-NUMBER: 20020173231  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020173231 A1

TITLE: Polishing pad for semiconductor wafer and laminated body for polishing of semiconductor wafer equipped with the same as well as method for polishing of semiconductor wafer

PUBLICATION-DATE: November 21, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hasegawa, Kou	Mie		JP	

US-CL-CURRENT: 451/6; 451/41, 451/533

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 3. Document ID: US 20020010232 A1

Art Unit: 1711

avoid repetitions because many claims now carry same or similar recitations. It seems that the applicants found it difficult to understand. Hence the above-elaborated version of the same matter (as in earlier office action, Paper No. 11) is presented.

Following lines should explain the motivation to combine Kataoka (JP 58131903) and Fujita (JP 62-3336302).

Kataoka discloses an agricultural composition containing a water-soluble salt, a copolymer and an aqueous medium and also some water-insoluble materials. Kataoka does not disclose a composition in which certain agriculturally useful water-insoluble materials are used. Fujita also discloses an agricultural composition which differs from that of Kataoka in using (claimed) agriculturally useful water-insoluble materials. It is consequently obvious to one of ordinary skill in the art to get an idea of using the water-insoluble materials of Fujita in the composition of Kataoka in place of existing water-insoluble materials to make the composition (of Kataoka) more useful and more effective for agricultural purposes.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

L26: Entry 3 of 12

File: PGPB

Jan 24, 2002,

PGPUB-DOCUMENT-NUMBER: 20020010232  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020010232 A1

TITLE: Composition for polishing pad and polishing pad using the same

PUBLICATION-DATE: January 24, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ogawa, Toshihiro	Tokyo		JP	
Hasegawa, Kou	Tokyo		JP	
Kawahashi, Nobuo	Tokyo		JP	

US-CL-CURRENT: 523/448

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC

☐ 4. Document ID: US 6544503 B1

L26: Entry 4 of 12

File: USPT

Apr 8, 2003

US-PAT-NO: 6544503  
DOCUMENT-IDENTIFIER: US 6544503 B1

TITLE: Process for the preparation of aqueous dispersions of particles of water-soluble polymers and the particles obtained

DATE-ISSUED: April 8, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Vanderhoff; John W.	Bethlehem	PA		
Lu; Cheng Xun	Somerset	NJ		
Lee; Clarence C.	Lilburn	GA		
Tsai; Chi-Chun	Lawrenceville	GA		

US-CL-CURRENT: 424/78.17; 424/422, 424/423, 424/489

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 5. Document ID: US 6214331 B1

L26: Entry 5 of 12

File: USPT

Apr 10, 2001

US-PAT-NO: 6214331  
DOCUMENT-IDENTIFIER: US 6214331 B1

TITLE: Process for the preparation of aqueous dispersions of particles of water-soluble polymers and the particles obtained

DATE-ISSUED: April 10, 2001

Art Unit: 1711

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to U.K. Rajguru whose telephone number is 703-308-3224. The examiner can normally be reached on Monday-Friday from 9:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 703-308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

U. K. Rajguru/mn  
October 11, 2002



## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Vanderhoff; John W.	Bethlehem	PA		
Lu; Cheng Xun	Somerset	NJ		
Lee; Clarence C.	Lilburn	GA		
Tsai; Chi-Chun	Lawrenceville	GA		

US-CL-CURRENT: 424/78.17; 424/423, 424/489, 514/54, 514/772.1, 523/113, 525/54.3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
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☐ 6. Document ID: US 6184271 B1

L26: Entry 6 of 12

File: USPT

Feb 6, 2001

US-PAT-NO: 6184271

DOCUMENT-IDENTIFIER: US 6184271 B1

TITLE: Absorbent composite containing polymaleic acid crosslinked cellulosic fibers

DATE-ISSUED: February 6, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Westland; John A.	Auburn	WA		
Jewell; Richard A.	Bellevue	WA		
Neogi; Amar N.	Seattle	WA		

US-CL-CURRENT: 524/13; 524/35, 525/54.21, 604/358, 604/365, 604/374, 604/904

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
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☐ 7. Document ID: US 5998511 A

L26: Entry 7 of 12

File: USPT

Dec 7, 1999

US-PAT-NO: 5998511

DOCUMENT-IDENTIFIER: US 5998511 A

TITLE: Polymeric polycarboxylic acid crosslinked cellulosic fibers

DATE-ISSUED: December 7, 1999

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Westland; John A.	Auburn	WA		
Jewell; Richard A.	Bellevue	WA		
Neogi; Amar N.	Seattle	WA		

US-CL-CURRENT: 524/13; 524/35, 525/54.21

Art Unit: 1711

1. Finality of earlier office action Paper No. 11, mailed on July 2, 2002 is hereby withdrawn to issue a new supplemental final rejection addressing the issues raised by the applicants.
2. Claims under examination are 1, 2 and 9-57.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 15, 16, 24, 25, 27, 29, 32, 46, 47-49, 51, 54 and 55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 is vague because it recites Y as a carbon atom and O as a sulfur atom or POR. How can a carbon atom in the same formula be represented by C and Y?. How can hydrogen in the same formula be represented by R2 and R?. How can a sulfur atom (which in all scientific literature is represented by S) be represented by O?. Meaning of word "residue" is not clear. Also not clear is word "POR". Does P stand for phosphorus and O for oxygen or sulfur?. What does "R" stand for?.

Similar comments apply to claims 16, 25, 26, 47 and 48.

Claims 29, 32 and 51 are vague in reciting "agriculturally acceptable salt". What is an agriculturally acceptable salt?.

Claims 27 and 49 are vague since meaning of "will not substantially change" is not clear.

Claim 55 is vague since meaning of "copolymers are in range of 1000 to 90,000 daltons" is not clear.

Claims 24 and 46 are indefinite in containing an improper Markush terminology. The members of the group have to be connected by "and" (not "or" as is done in these claims).

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 8. Document ID: US 5516522 A

L26: Entry 8 of 12

File: USPT

May 14, 1996

US-PAT-NO: 5516522

DOCUMENT-IDENTIFIER: US 5516522 A

TITLE: Biodegradable porous device for long-term drug delivery with constant rate release and method of making the same

DATE-ISSUED: May 14, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Peyman; Gholam A.	New Orleans	LA		
Yang; Dachuan	New Orleans	LA		
Khoobehi; Bahram	New Orleans	LA		

US-CL-CURRENT: 424/426; 424/422, 424/424, 424/427

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 9. Document ID: US 5200083 A

L26: Entry 9 of 12

File: USPT

Apr 6, 1993

US-PAT-NO: 5200083

DOCUMENT-IDENTIFIER: US 5200083 A

TITLE: Skimmer and method for its use

DATE-ISSUED: April 6, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kaylor; Joseph B.	Manassas	VA		

US-CL-CURRENT: 210/671; 210/242.3, 210/242.4, 210/680, 210/693, 210/776, 210/923, 210/924

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 10. Document ID: US 5189107 A

L26: Entry 10 of 12

File: USPT

Feb 23, 1993

US-PAT-NO: 5189107

DOCUMENT-IDENTIFIER: US 5189107 A

Art Unit: 1711

Claims 25 and 26 are indefinite because they recite a group having only one member.

Claim 54 is indefinite in reciting "derivatives" in lines 21 and 22 because it is not known which specific derivatives are envisioned in the scope of this claim.

5. Claims 9-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. (JP 58131903) in view of Fujita et al. (JP 62-36302). (see English translations of these references).

Kataoka discloses a composition containing a water soluble sodium salt of a sulfonated monolefin and/or ethylenic unsaturated dicarboxylic acid copolymer resin (page 4, paragraph 2 of English translation). Insoluble materials such as bentonite, calcium carbonate are mentioned on page 7, prescription, (I). The copolymers disclosed by patentee read on those that are instantly claimed.

Kataoka does not mention an insoluble material that is useful for agricultural purposes such as those of instant claim 34.

Fujita discloses an agricultural chemical composition in which insecticides and similar other insoluble materials are used.

It would have been obvious from teachings of Fujita to use the insoluble materials of Fujita as alternate materials in the composition of Kataoka because then Kataoka's composition will have agriculturally useful insoluble materials very well dispersed in water due to the presence of copolymers which Kataoka has in its composition.

6. Claims 1, 9, 15, 16, 18, 24-26, 33, 37-41, 46-48, 55 and 57 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in

TITLE: Process for preparing polymer particles

DATE-ISSUED: February 23, 1993

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kasai; Kiyoshi	Tokyo			JP
Sakurai; Fujio	Tokyo			JP
Tadenuma; Hiroshi	Tokyo			JP

US-CL-CURRENT: 525/244; 525/178, 525/264, 525/285, 525/301, 525/304, 525/308, 525/313, 525/902

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw. Desc	Image									

☐ 11. Document ID: JP 01163663 A

L26: Entry 11 of 12

File: JPAB

Jun 27, 1989

PUB-NO: JP401163663A

DOCUMENT-IDENTIFIER: JP 01163663 A

TITLE: IMMUNOLOGICAL DIAGNOSING DRUG CARRIER PARTICLE

PUBN-DATE: June 27, 1989

## INVENTOR-INFORMATION:

NAME	COUNTRY
HASEGAWA, JUN	
OIKAWA, HARUKI	
SEKIYA, MASAYOSHI	

US-CL-CURRENT: 435/967

INT-CL (IPC): G01N 33/545; C08F 2/06; C08F 20/54; C08J 3/12

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw. Desc	Image									

☐ 12. Document ID: EP 1164559 A1

L26: Entry 12 of 12

File: EPAB

Dec 19, 2001

PUB-NO: EP001164559A1

DOCUMENT-IDENTIFIER: EP 1164559 A1

TITLE: Composition for polishing pad and polishing pad using the same

PUBN-DATE: December 19, 2001

## INVENTOR-INFORMATION:

NAME	COUNTRY
OGAWA, TOSHIHIRO	JP
HASEGAWA, KOU	JP
KAWAHASHI, NOBUO	JP

Art Unit: 1711

such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Introduction of - finely divided solid - and water soluble - in claims 1, 9, etc. has been shown by applicants to have support from the specification; but (a) changing "cyclopentene" to - cyclopentane - in claim 1, (b) introduction of a proviso at end of step (i) in a claim 9, (c) introduction of - or  $\text{CH}_2\text{CO}_2\text{H}$  - etc. in claim 15 and (d) similar other changes in remaining claims are presented without pointing the support thereof.

7. Rejection of claims 15, 16, 24, 27, 29, 32, 46-49, 51, 54 and 55 under 35 U.S.C. 112, second paragraph (see item 6, prior Office action, Paper No. 6) is maintained since the applicants' arguments against the said rejection (on page 25 of Paper No. 9) are not persuasive.

Claim 55 as amended recites "a molecular weight" but fails to specify which type of molecular weight is envisioned.

On page 28 (of Paper No. 9), the applicants state that "As the Examiner has noted, Kataoka does not mention ... agrochemical principles". This statement is not true since the Examiner has noted that "Kataoka does not mention an insoluble material that is useful for agricultural purposes".

Applicants' other argument (page 29) that there is no motivation to combine references is not persuasive because such motivation is presented (see page 6) in prior Office action (Paper No. 6).

8. A response (Paper No. 12) has been filed on September 3, 2002.

9. The amendment filed April 8, 2002 (Paper No. 9) is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment

INT-CL (IPC): G09 G 1/00; C08 J 9/00  
EUR-CL (EPC): C08L101/00

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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Term	Documents
(25 AND 1).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	12
(L1 AND L25).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	12

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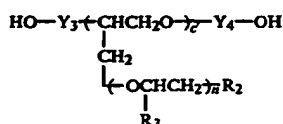
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Homopolymers satisfying Formula (III) above, may be prepared by either of the following two procedures. One procedure involves:

(1) reacting said hydrophobic reactant with (a) said polyethylene glycol or (b) its monomeric equivalent comprised of sufficient moles of at least one oxyalkylene glycol of the formula



wherein  $R_4$  is hydrogen or  $C_1$  to  $C_3$  alkyl, to produce b moles a diol intermediate having the formula:



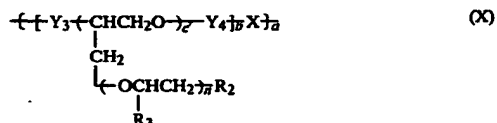
wherein:

$c'$  is the average number of monovalent hydrophobic groups per diol intermediate;

$n$ ,  $R_2$  and  $R_3$  are as defined previously; and

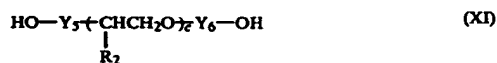
$Y_3$  and  $Y_4$  are the residue of the polyethylene glycol or oxyalkylene reaction; followed by

(2) reacting the diol intermediate with the polyisocyanate to produce the polyurethane having the repeating structure:



wherein  $a$ ,  $b$ ,  $c'$ ,  $n$ ,  $R_2$ ,  $R_3$ ,  $X$ ,  $Y_3$  and  $Y_4$  are as defined previously. Another procedure comprises:

(1) grafting the hydrophobe reactant onto the polyethylene glycol to produce a diol intermediate having the formula:



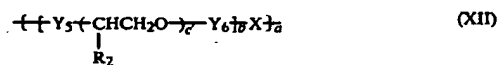
wherein:

$R_2$  is as defined previously;

$c'$  is the average number of grafts containing said monovalent hydrophobic group, and

$Y_5$  and  $Y_6$  are the residue of the polyethylene glycol; followed by

(2) reacting the diol intermediate with the polyisocyanate to produce the polyurethane having the repeating structure



wherein  $a$ ,  $b$ ,  $c'$ ,  $R_2$ ,  $X$ ,  $Y_5$  and  $Y_6$  are as defined previously.

The temperature during the polymerization reaction may vary. A convenient range is from about 40° C. to about 120° C. preferably from about 60° C. to about 110° C. The reaction temperature should be selected to obtain a reasonably fast reaction rate while avoiding

undesirable side reactions, such as allophonate formation. The comb polymer product may be isolated from the reaction medium by procedures well established in the art, including evaporation, distillation, precipitation, filtration and other isolation procedures.

In a typical embodiment, a round bottom reaction flask equipped with a mechanical stirrer, a thermometer, a condenser and a nitrogen purge is charged with the polyethylene glycol, hydrophobe reactant and toluene solvent. The mixture is brought to reflux to azeotropically remove residual water and cooled to 60° C. Catalyst and the polyisocyanate are then added until the reaction mixture becomes viscous after a few hours. Product can then be isolated through the evaporation of solvent at atmospheric conditions.

### Adjuvants

Suitable adjuvants may be provided during the formation of comb polymers of the present invention including solvents and catalysts well known to those skilled in the art.

The polymerization reaction can be conducted neat or in an aprotic solvent such as toluene or other well known urethane polymerization solvents. Typical catalysts include soluble heavy metal carboxylates, such as phenyl mercuric acetate, bismuth octanoate, dibutyltin dilaurate, and stannous octanoate; tertiary amines, such as bis[2-(N,N-dimethylamino) ethyl ether], triethylamine and triethylenediamine; or any other acidic or basic catalyst well known in the urethane art. A particularly preferred catalyst is dibutyltin dilaurate.

When used in an aqueous solution, the water-soluble, thermoplastic, organic polymer of the present invention is provided in an effective amount to produce thickening of the aqueous solution. An "effective thickening amount" is defined as the quantity of polymer, whether alone or in combination with polymer thickeners of the prior art, required to produce enhanced thickening. Such amount will usually range between about 0.05 to about 15 weight percent, preferably between about 0.1 to about 5 weight percent, and most preferably between about 0.2 to about 2 weight percent of the total composition. Such thickened compositions are useful in a wide variety of applications, such as latex compositions.

### EXAMPLES

The following examples are considered to be illustrative only and should not be regarded as limiting the invention.

The chemical designations as used in the examples are defined as follows:

Designation	Description
$C_x$ Diol	A 1,2 alkanediol containing a chain of $x$ carbon atoms
DBTD	Dibutyltin dilaurate catalyst
HLB	Hydrophilic/Lipophilic Balance
IPDI	Isophorone diisocyanate
MDI	Methylene dianiline diisocyanate
NP Diol	$C_9H_{19}-(CH_2)_l-O-(CH_2CH_2O)_n-CH_2CH(OH)CH_2OH$ wherein $l$ is 0



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(L25 AND L34).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	0

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<u>L35</u>	l25 and L34	0	<u>L35</u>
<u>L34</u>	11 near3 organic peroxide	52	<u>L34</u>
<u>L33</u>	l25 and L32	0	<u>L33</u>
<u>L32</u>	11 near5 organic peroxide	45	<u>L32</u>
<u>L31</u>	l25 and L28	2	<u>L31</u>
<u>L30</u>	l25 and L29	0	<u>L30</u>
<u>L29</u>	11 near organic peroxide	25	<u>L29</u>
<u>L28</u>	11 and organic peroxide	1578	<u>L28</u>
<u>L27</u>	11 and L25	12	<u>L27</u>

1. An RCE (paper 13) has been filed on March 11, 2003.
2. Claims being examined are 2-8, 10, 11 and 13.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claim 7 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- Claim 13 is indefinite in containing abbreviations.
- Abbreviations in this claim need to be removed.
- Claim 7 is also indefinite in containing abbreviations.
5. Objection to claims 2-6, 8, 10 and 11 (see item 5) of prior office action (paper 8) is now withdrawn
- Rejection of claims 12 is (item 6 of same office action) is moot, since that claim is cancelled.
6. Claims 2, 3, 7 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hermann et al (USP 3477986).
- (Hermann is of record on PTO-1449, paper 5).
- Hermann discloses polyamides stabilized with a copper compound and a phosphonium halide (abstract). Polyamides include polycaprolactum (col. 4, lines 16-17). Suitable copper compounds are listed in col. 2, line 71 to col. 3, line 6. Suitable halogen-containing aromatic compounds are given in col. 2, lines 23-63.
- Above claims therefore lack novelty.

<u>L26</u>	l1 and L25	12	<u>L26</u>
<u>L25</u>	water soluble particle	622	<u>L25</u>
<u>L24</u>	l1 same L23	13	<u>L24</u>
<u>L23</u>	l3 near2 l4	7985	<u>L23</u>
<u>L22</u>	l3 near3 l4	10297	<u>L22</u>
<u>L21</u>	l3 near5 l4	14026	<u>L21</u>
<u>L20</u>	l1 same L18	10	<u>L20</u>
<u>L19</u>	l1 and L18	147	<u>L19</u>
<u>L18</u>	l3 near l4	4704	<u>L18</u>
<u>L17</u>	l5 and L13 and l9 and polishing pad	21	<u>L17</u>
<u>L16</u>	l5 and L13 and l9 [ti]	922	<u>L16</u>
<u>L15</u>	l5 and L13 and l9	6380	<u>L15</u>
<u>L14</u>	l5 and L13	7993	<u>L14</u>
<u>L13</u>	rubber near (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	106244	<u>L13</u>
<u>L12</u>	rubber and (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	207409	<u>L12</u>
<u>L11</u>	l6 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	l6 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	l1 and L5 and (composition or composit)	5278	<u>L8</u>
<u>L7</u>	l1 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	l1 and L5	6229	<u>L6</u>
<u>L5</u>	l3 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

Art Unit: 1711

7. Claims 2, 3, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermann et al (USP 3477986).

Disclosure of Hermann is presented earlier.

It could have been obvious to follow teachings of Hermann to arrive at instant

invention.

8. Claims 4, 5 and 6<sup>10</sup> are rejected under 35 U.S.C. 103(a) as being unpatentable

over Hermann et al (USP 3477986) as applied to claim 13 above, and further in view of Watanabe et al (USP 5266618), Gitsman (EP 390277), Lee (USP 3865792) and Rody

et al (USP 4200026).

(Gitsman and Rody have been cited in earlier office actions).

Disclosure of Hermann is presented earlier.

Hermann does not mention specific compounds of above claims. Watanabe discloses resin composition. One suitable resin is a polyamide (col. 3, line 19). A

phosphorus compound such as tris(tri-bromoneopentyl) phosphate (of instant claim 4) is used (col. 5, lines 34-35).

Gitsman discloses polyamide composition containing a halogen substituted organic compound. Such compounds are halogen-substituted epoxy and styrene

oligomers or polymers (p. 2, lines 20-24).

Lee discloses polyamide copolymers. In col. 12, line 12, chloroparaffins are disclosed as an additive for flameproofing.

Rody discloses light stabilizers for plastics. Organic phosphates<sup>6</sup> are used as one of suitable stabilizers (col. 63, lines 41-44).

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<u>L31</u>	l25 and L28	2	<u>L31</u>
<u>L30</u>	l25 and L29	0	<u>L30</u>
<u>L29</u>	l1 near organic peroxide	25	<u>L29</u>
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<u>L27</u>	l1 and L25	12	<u>L27</u>
<u>L26</u>	l1 and L25	12	<u>L26</u>
<u>L25</u>	water soluble particle	622	<u>L25</u>
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Art Unit: 1711

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(Gijtsman and Rody have been cited in earlier office actions).

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oligomers or polymers (p. 2, lines 20-24).

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<u>L22</u>	l3 near3 l4	10297	<u>L22</u>
<u>L21</u>	l3 near5 l4	14026	<u>L21</u>
<u>L20</u>	l1 same L18	10	<u>L20</u>
<u>L19</u>	l1 and L18	147	<u>L19</u>
<u>L18</u>	l3 near l4	4704	<u>L18</u>
<u>L17</u>	l5 and L13 and l9 and polishing pad	21	<u>L17</u>
<u>L16</u>	l5 and L13 and l9 [ti]	922	<u>L16</u>
<u>L15</u>	l5 and L13 and l9	6380	<u>L15</u>
<u>L14</u>	l5 and L13	7993	<u>L14</u>
<u>L13</u>	rubber near (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	106244	<u>L13</u>
<u>L12</u>	rubber and (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	207409	<u>L12</u>
<u>L11</u>	l6 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	l6 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	l1 and L5 and (composition or composit)	5278	<u>L8</u>
<u>L7</u>	l1 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	l1 and L5	6229	<u>L6</u>
<u>L5</u>	l3 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

Therefore it would have been obvious to add to the moldings of Hermann, (a) phosphate/s of Watanabe for imparting flame retardancy and impact strength, (b) halogen substituted compound of Gijssman for stabilization, (c) chloroparaffin of Lee to enhance flame retardancy and (d) organic phosphites of Rody to impart synergistic effect in stabilization.

It is noted that prior art does not mention preparation of a master bath (of instant claim 8). It is the examiner's position that use of master batch is a well-known method in the art in order to control precisely the addition of small amounts of ingredients. Claim 8 therefore carries no patentably distinguishable features.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to U.K. Rajguru whose telephone number is 703-308-

3224. The examiner can normally be reached on Monday-Friday from 9:30 am to 6:00

pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, James J. Seidleck can be reached on 703-308-2462. The fax phone

numbers for the organization where this application or proceeding is assigned are 703-

872-9310 for regular communications and 703-872-9311 for After Final

communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-308-

0661.



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<u>L24</u>	11 same L23	13	<u>L24</u>
<u>L23</u>	13 near2 l4	7985	<u>L23</u>
<u>L22</u>	13 near3 l4	10297	<u>L22</u>
<u>L21</u>	13 near5 l4	14026	<u>L21</u>
<u>L20</u>	11 same L18	10	<u>L20</u>
<u>L19</u>	11 and L18	147	<u>L19</u>
<u>L18</u>	13 near l4	4704	<u>L18</u>
<u>L17</u>	15 and L13 and l9 and polishing pad	21	<u>L17</u>
<u>L16</u>	15 and L13 and l9 [ti]	922	<u>L16</u>
<u>L15</u>	15 and L13 and l9	6380	<u>L15</u>
<u>L14</u>	15 and L13	7993	<u>L14</u>
<u>L13</u>	rubber near (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	106244	<u>L13</u>
<u>L12</u>	rubber and (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	207409	<u>L12</u>
<u>L11</u>	16 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	16 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	11 and L5 and (composition or composit)	5278	<u>L8</u>
<u>L7</u>	11 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	11 and L5	6229	<u>L6</u>
<u>L5</u>	13 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

(12) United States Patent

(10) Patent No.: US 6,310,125 B1  
(45) Date of Patent: Oct. 30, 2001



US0006310125B1

(54) WATER-DISPERSED ADHESIVE COMPOSITIONS

(75) Inventor: Terry J. Rayner, London (CA)  
(73) Assignee: 3M Innovative Properties Company, St. Paul, MN (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/543,185

(22) Filed: Apr. 5, 2000

(51) Int. Cl.<sup>7</sup> C08J 5/10; C08K 5/29; C08L 75/00

(52) U.S. Cl. 524/195; 524/175; 524/204; 524/217; 427/207.1; 427/388.4

(58) Field of Search 524/204, 217; 427/207.1, 385.5, 388.4

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Primary Examiner—James J. Seidleck

Assistant Examiner—U. K. Rajguru

(74) Attorney, Agent, or Firm—Scott A. Bardell

ABSTRACT

The invention provides water-dispersed adhesive compositions comprising a high modulus crystallizing polyester polyurethane, a polychloroprene, acrylic ester copolymer, a resin selected from the group consisting of thermosetting resins, thermoplastic resins, and a combinations thereof and a stabilizer system. The invention also provides adhesive made from the above adhesive compositions.

19 Claims, No Drawings

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*DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ*

<u>L20</u>	11 same L18	10	<u>L20</u>
<u>L19</u>	11 and L18	147	<u>L19</u>
<u>L18</u>	13 near 14	4704	<u>L18</u>
<u>L17</u>	15 and L13 and 19 and polishing pad	21	<u>L17</u>
<u>L16</u>	15 and L13 and 19 [ti]	922	<u>L16</u>
<u>L15</u>	15 and L13 and 19	6380	<u>L15</u>
<u>L14</u>	15 and L13	7993	<u>L14</u>
<u>L13</u>	rubber near (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	106244	<u>L13</u>
<u>L12</u>	rubber and (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	207409	<u>L12</u>
<u>L11</u>	16 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	16 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	11 and L5 and (composition or composit)	5278	<u>L8</u>
<u>L7</u>	11 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	11 and L5	6229	<u>L6</u>
<u>L5</u>	13 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannit or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

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per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis; the resin is a combination of thermoplastic resin and thermosetting resin wherein the thermoplastic resin comprises rosin esters, acrylic resins, or pure monomer hydrocarbon resins and the thermosetting resin comprises phenolic resins based on butylphenol, phenol and cresol, butylphenol and bisphenol A, amylphenol and bisphenol A, bisphenol A, octylphenol, phenol or combinations thereof, and wherein the composition further comprises from about 0.3 to about 3.2 parts of hydrophobically-

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modified associative polyurethane per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis.

19. A method of bonding a substrate comprising the steps of:

applying the adhesive composition of claim 1 to a substrate; and  
removing water from the adhesive composition.

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*DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ*

<u>L17</u>	l5 and L13 and l9 and polishing pad	21	<u>L17</u>
<u>L16</u>	l5 and L13 and l9 [ti]	922	<u>L16</u>
<u>L15</u>	l5 and L13 and l9	6380	<u>L15</u>
<u>L14</u>	l5 and L13	7993	<u>L14</u>
<u>L13</u>	rubber near (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	106244	<u>L13</u>
<u>L12</u>	rubber and (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	207409	<u>L12</u>
<u>L11</u>	l6 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	l6 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	l1 and L5 and (composition or composit)	5278	<u>L8</u>
<u>L7</u>	l1 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	l1 and L5	6229	<u>L6</u> ←
<u>L5</u>	l3 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u> ↗
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u> —

END OF SEARCH HISTORY

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temperature aging, T-Peel Strength at room temperature, and overlap shear strength according to the test methods described above. The substrates and test results are presented in Tables 10 and 11.

TABLE 10

Test	Substrates	Test Results				
		Ex. 1	Ex. 13	Ex. 16	Ex. 17	Ex. 18
180° Peel Strength At Room Temperature, piw (kN/m)	Twill to CRS	21.96 (3.86)	5.19 (0.91)	12.40 (2.18)	9.40 (1.65)	20.37 (3.59)
	Twill to Gal. Steel	23.94 (4.21)	2.95 (0.70)	9.91 (1.74)	7.67 (1.35)	15.71 (2.76)
	Twill to ABS	22.79 (4.01)	—	—	—	—
180° Peel Strength After Elevated Temperature Aging, piw (kN/m)	Twill to CRS	—	10.1 (1.78)	22.3 (3.92)	16.1 (2.83)	27.5 (4.84)
	Twill to Gal. Steel	—	9.08 (1.60)	25.10 (4.42)	13.78 (2.443)	26.07 (4.59)
T-Peel Strength At Room Temperature, piw (kN/m)	Twill to Twill	—	14.63 (2.57)	11.46 (2.02)	11.25 (1.98)	21.75 (3.83)
Overlap Shear Strength, psi (MPa)	Oak to Oak	245 (1.69)	—	159 (1.10)	—	105 (0.72)
	ABS to ABS	380 (2.62)	—	318 (2.19)	—	400 (2.76)
	CRS to CRS	125 (0.86)	—	188 (1.30)	—	261 (1.80)
	Gai. Steel to Steel	233 (1.60)	—	224 (1.54)	—	232 (1.53)
	Gal. Steel	—	—	—	—	—

TABLE 11

Test	Substrates	Test Results				
		Ex. 14	Ex. 15	Ex. C-1	Ex. C-2	Ex. C-3
180° Peel Strength At Room Temperature, piw	Twill to CRS	16.87 (2.97)	19.62 (3.45)	1.83 (0.32)	5.05 (0.89)	12.06 (2.12)
	Twill to Gal. Steel	13.57 (2.39)	12.27 (2.16)	1.73 (0.30)	4.65 (0.82)	14.8 (2.60)
	Twill to Twill	39.8	41.4	6.18	—	—

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TABLE 11-continued

Test	Substrates	Test Results				
		Ex. 14	Ex. 15	Ex. C-1	Ex. C-2	Ex. C-3
(kN/m)	ABS	(7.00)	(7.29)	(1.09)	—	—
180° Peel Strength After Elevated Temperature Aging, piw (kN/m)	Twill to CRS	32.60 (5.74)	24.78 (4.36)	1.47 (0.26)	8.92 (1.44)	10.51 (1.85)
	Twill to Gal. Steel	24.4 (4.29)	16.22 (2.85)	1.84 (0.32)	4.67 (0.82)	13.41 (2.36)
T-Peel Strength At Room Temperature, piw (kN/m)	Twill to Twill	22.49 (3.96)	13.04 (2.30)	10.2 (1.80)	0.85 (0.15)	No bond
Overlap Shear Strength, psi (MPa)	Oak to Oak	150 (1.03)	200 (1.38)	17.4 (0.12)	No bond	No bond
	ABSto	351	412	33	49.5	No bond
	ABS	(2.42)	(2.84)	(0.23)	(0.34)	bond
	CRSto	294	150	17	25.6	No bond
	CRS	(2.02)	(1.03)	(0.12)	(0.18)	bond
	Gal. Steel to Gal. Steel	227 (1.56)	234 (1.61)	24 (0.16)	No bond	No bond

## Examples 19–26

Examples 19–26 illustrate the utility of enhancing the thermal resistance through the addition of various crosslinkers and thermosetting resins.

Seven adhesive compositions were prepared by combining in order as in Example 1, the components outlined in Table 2. In addition to the components listed in Table 12, each composition contained 100 parts DDS3507 (45% solid content), 3.7 phr A310S, 3.08 phr P200, 3.08 phr O1640, 3.08 phr Trisamino, 0.62 phr RM1020 and 1.06 phr ASE75, and 0.16 phr F111.

TABLE 12

Component	Percent Solid Content (%)	Phr based on 100 parts by wt. DDS3507							
		Ex. 19	Ex. 20	Ex. 21	Ex. 22	Ex. 23	Ex. 24	Ex. 25	Ex. 26
AQS1120	48.1	60	60	60	60	55	59.2	60	60
HRJ13130	43.3	—	—	—	—	—	—	—	6.66
TS001	55.0	34.06	34.06	34.06	—	24.06	34.06	—	34.06
W78	100	—	1.5	—	—	—	—	—	—
NH4Cl	35	—	—	—	—	—	—	0.5	—
BI7986	40.0	—	—	7.5	—	—	—	—	—
AL3029C	65	—	—	—	—	10	—	—	—
MgO	30	0.75	—	—	—	—	—	—	—
AL8405C	61	—	—	—	34.06	—	—	34.06	—
A6010	100	—	—	—	—	—	3.0	—	—

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<u>L13</u>	rubber near (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	106244	<u>L13</u>
<u>L12</u>	rubber and (polybutadiene or butadiene or isoprene or acrylic or acrylonitrile-butadiene or styrene -butadiene or ethylene-propylene or silicone or fluorine or styrene-isoprene)	207409	<u>L12</u>
<u>L11</u>	l6 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	l6 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	l1 and L5 and (composition or composit)	5278	<u>L8</u>
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<u>L6</u>	l1 and L5	6229	<u>L6</u>
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<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

TABLE 16

Ex. No.	Temperature, ° C.	% Increase in G'				
		Time, Minutes				
		2	5	10	20	30
1	80	75	199	337	402	427
3	80	71	217	486	904	1221
5	80	39	112	254	583	811
18	80	21	72	202	577	861
	50	45	146	480	872	991
27	80	—	40	117	291	475
	50	54	163	352	696	889
28	80	—	33	74	195	347
	50	32	90	180	338	538
29	80	—	48	141	369	529
	50	26	73	166	393	591
30	80	37	123	369	310	313
31	80	25	79	529	304	378
32	80	60	155	269	457	513
33	80	30	86	199	375	442
34	80	38	105	199	342	440
35	80	46	172	426	564	594
36	80	29	75	169	378	523
37	80	76	263	627	1193	1450
38	80	28	58	79	73	73
39	80	35	88	179	334	438
C-1	80	3	6	9	13	15
C-2	80	8	12	17	21	23
C-3	80	10	17	23	30	35
U53	80	70	175	608	5262	—
DDS3507	80	229	439	589	588	601

This invention may take on various modifications and alterations without departing from the spirit and scope thereof. Accordingly, it is to be understood that this invention is not to be limited to the above-described, but it is to be controlled by the limitations set forth in the following claims and any equivalents thereof. It is also to be understood that this invention may be suitably practiced in the absence of any element not specifically disclosed herein.

What is claimed:

1. A water-dispersed adhesive composition comprising: a high modulus crystallizing polyester polyurethane; a polychloroprene; acrylic ester copolymer; a resin selected from the group consisting of thermosetting resins, thermoplastic resins, and a combinations thereof; and a stabilizer system selected from the group consisting of branched primary amino alcohols; a combination of branched primary amino alcohol and carbodiimide; a combination of carbodiimide and dihydroxy metal compound; a combination of branched primary amino alcohol and dihydroxy metal compound; and a combination of branched primary amino alcohol, carbodiimide, and magnesium oxide.
2. The water-dispersed adhesive composition of claim 1 wherein the polychloroprene is present in the composition at a level of from about 20 to about 285 parts per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis.
3. The water-dispersed adhesive composition of claim 1 wherein the acrylic ester copolymer is present in the composition at a level of from about 1 to about 200 parts acrylic ester copolymer per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis.
4. The water-dispersed adhesive composition of claim 1 wherein the high modulus crystallizing polyester polyurethane is a high modulus crystallizing sulfonated polyester polyurethane.

5. The water-dispersed adhesive composition of claim 1 further comprising a rheology modifier.

6. The water-dispersed adhesive composition of claim 5 wherein the rheology modifier is present in an amount of from about 0.3 to about 3.2 parts per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis.

7. The water-dispersed adhesive composition of claim 5 wherein the rheology modifier is a hydrophobically-modified associative polyurethane.

8. The water-dispersed adhesive composition of claim 1 wherein the resin is a combination of thermoplastic resin and the thermosetting resin.

9. The water-dispersed adhesive composition of claim 8 wherein the thermosetting resin is present in an amount of from about 2 to about 15 parts per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis and the thermoplastic resin is present in an amount of from about 10 to about 40 parts per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis.

10. The water-dispersed adhesive composition of claim 8 wherein the thermoplastic resin comprises rosin esters, acrylic resins, or pure monomer hydrocarbon resins and the thermosetting resin comprises phenolic resins based on butylphenol, phenol and cresol, butylphenol and bisphenol A, amylphenol and bisphenol A, bisphenol A, octylphenol, phenol, or combinations thereof.

11. The water-dispersed adhesive composition of claim 1 wherein the branched primary amino alcohols are selected from the group consisting of 2-amino-1-butanol; 2-amino-2-methyl-1,3-propanediol; 2-amino-2-methyl-1-propanol; 2-amino-2-ethyl-1,3-propanediol; tris(hydroxymethyl) aminomethane; and combinations thereof.

12. The water-dispersed adhesive composition of claim 1 wherein the carbodiimide is selected from the group consisting of water dispersions of the reaction product of tetramethylxylene diisocyanate; (poly (nitrilomethanetetraylnitrilo (2,4,6-tris(1-methylethyl)-1,3-phenylene)); tetraisopropylidiphenylcarbodiimide; and combinations thereof.

13. The water-dispersed adhesive composition of claim 1 wherein the dihydroxy metal compound is selected from the group consisting of dihydroxyaluminum aminoacetate; dihydroxyaluminum sodium carbonate; and combinations thereof.

14. The water-dispersed adhesive composition of claim 1 further comprising an antioxidant.

15. The water-dispersed adhesive composition of claim 14 wherein the stabilizer system is a combination of branched primary amino alcohol and carbodiimide.

16. The water-dispersed adhesive composition of claim 15 wherein the branched primary amino alcohol is present in an amount of from about 0.5 to about 5 parts per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis and the carbodiimide is present in an amount of from about 0.5 to about 5 parts per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis.

17. The water-dispersed adhesive composition of claim 16 wherein the branched primary amino alcohol is tris (hydroxymethyl)aminomethane and the carbodiimide is a reaction product of tetramethylxylene diisocyanate.

18. The water-dispersed adhesive composition of claim 17 wherein the polychloroprene is present in an amount of from about 20 to about 285 parts per 100 parts high modulus crystallizing polyester polyurethane on a dry weight basis; the acrylic ester copolymer is a copolymer of butyl acrylate and methyl methacrylate crosslinked with a dihydrazide and is present in an amount of from about 1 to about 200 parts



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side by side			result set
	DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
<u>L11</u>	l6 and L9 [ti]	1018	<u>L11</u>
<u>L10</u>	l6 and L9	5278	<u>L10</u>
<u>L9</u>	(composition or composit)	1837467	<u>L9</u>
<u>L8</u>	l1 and L5 and (composition or composit)	5278	<u>L8</u>
<u>L7</u>	l1 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	l1 and L5	6229	<u>L6</u>
<u>L5</u>	l3 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

1. Two amendments (Paper Nos. 8 and 9) has been filed on October 22, 2002 and November 4, 2002 (resp.)

2. Claims under examination are 1-13 and 15.  
3. Applicants have not affirmed the election of Group I, claims 1-13.  
4. Objection to claims 7-10, 12 and 13 (item 5 of prior Office Action Paper No. 6) is now withdrawn.

5. Rejections of respective claims in prior Office action (Paper No. 6) item Nos. 7, 9, 10, 11 and 12 are now withdrawn following the above amendments (viz. Paper Nos. 8 and 9).

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Padget et al (EP 75396) in view of Grimwood (USP 4,962,989) DE 4,405,864 or Agrawal et al (USP 5,255,483) and JP 2,142,859 or Tsutsui et al (USP 4,169,916).

Disclosures of Padget and Grimwood are summarized in earlier Office action

Paper No. 6.

Padget is silent on the newly added limitations of claim 1, the silicate binder (of claims 2-4), lubricant (of claim 7) and the inorganic binder (of claims 9 and 10).

DE '864 discloses the use of solid lubricants for high temp applications. Agrawal also discloses use of lubricant together with a polymeric binder (see col. 8, lines 11-16).

**Set Name Query**

side by side

**Hit Count Set Name**

result set

*DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ*

<u>L7</u>	l1 and L5 and polishing pad	20	<u>L7</u>
<u>L6</u>	l1 and L5	6229	<u>L6</u>
<u>L5</u>	l3 and L4	158560	<u>L5</u>
<u>L4</u>	(coated or encapsulated or outer shell)	1056647	<u>L4</u>
<u>L3</u>	(dextrin or cyclodextrin or mannitol or lactose or hydroxypropylcellulose or methylcellulose or starch or protein or polyvinyl alcohol or polyvinyl pyrrolidone or polyacrylic acid or polyethylene oxide or sulfonated polyisoprene or sulfonated polyisoprene copolymer)	588172	<u>L3</u>
<u>L2</u>	particle near (coated or encapsulated)	23921	<u>L2</u>
<u>L1</u>	(polymer or resin or oligomer) near (crosslinked or cured)	53005	<u>L1</u>

END OF SEARCH HISTORY

An RCE (paper 13) has been filed on March 11, 2003. Claims being examined are 2-8, 10, 11 and 13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 is indefinite because it requires a polyamide which is to be selected from a group of amides and a stabilizer. The stabilizer is not a polyamide. Format of this claim needs to be revised. Furthermore abbreviations in this claim need to be removed. Any inquiry concerning this communication or earlier communications from the examiner should be directed to U.K. Rajguru whose telephone number is 703-308-3224. The examiner can normally be reached on Monday-Friday from 9:30 am to 6:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 703-308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

**WEST**[Help](#)[Logout](#)[Interrupt](#)[Main Menu](#)[Search Form](#)[Posting Counts](#)[Show S Numbers](#)[Edit S Numbers](#)[Preferences](#)[Cases](#)**Search Results -**

Term	Documents
POLISHING	132781
POLISHINGS	150
PAD	360279
PADS	194816
(1 AND (POLISHING ADJ PAD) AND 5).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	20
(L1 AND L5 AND POLISHING PAD).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	20

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L7

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Application/Control Number: 09/807,662  
Art Unit: 1711

U. K. Rajguru/mn  
May 19, 2003



**WEST**[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 2 of 2 returned.**☐ 1. Document ID: US 20030060138 A1

L31: Entry 1 of 2

File: PGPB

Mar 27, 2003

PGPUB-DOCUMENT-NUMBER: 20030060138  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20030060138 A1

TITLE: Polishing pad for semiconductor wafer and polishing process using thereof

PUBLICATION-DATE: March 27, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hasegawa, Kou	Mie		JP	
Hosaka, Yukio	Mie		JP	

US-CL-CURRENT: 451/41

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 2. Document ID: US 20020010232 A1

L31: Entry 2 of 2

File: PGPB

Jan 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020010232  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020010232 A1

TITLE: Composition for polishing pad and polishing pad using the same

PUBLICATION-DATE: January 24, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ogawa, Toshihiro	Tokyo		JP	
Hasegawa, Kou	Tokyo		JP	
Kawahashi, Nobuo	Tokyo		JP	

US-CL-CURRENT: 523/448

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KVMC

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TABLE 4-continued

Examples 31-33			
Example	Reactants (gms)		Catalyst (gms)
	PEG 14,000	Hexadecene (wt. %)	
33	279	21 (7%)	1.4

## EXAMPLES 34-38

Polyurethanes are produced by charging 150 gms. of PEG 14,000 and 400 gms. toluene to a reaction vessel. The vessel is refluxed to azeotrope off all water. After cooling to 60° C., 0.12 gms. of DBTD catalyst and 1.8 gms. TDI are added. The reaction mixture is stirred at approximately 60° C. for several days. The evaporation of the toluene solvent provides a product having a 2.5% aqueous viscosity as indicated in Table 5. Example 38 provides a control identical to the products of Examples 34-37 but using a nongrafted PEG 14,000.

TABLE 5

Example	Examples 34-38		
	Reactants		
	PEG 14,000 Example #	Hydrophobe wt. %	Brookfield Viscosity of 2.5% Aqueous Solution (cps)
34	31	3%	740
35	32	5%	320
36	33	7%	ND
37 <sup>1</sup>	33	7%	54,320
38	—	0%	17.5

ND - not determined

<sup>1</sup> - based on 65 gms. of 7% grafted PEG 14,000 and 85 gms. of nongrafted PEG 14,000, with 1.9 gms. TDI.

## EXAMPLES 39-41

These examples provide a comparison between polyurethane comb polymers of the present invention and similar polyurethanes which do not contain the hydrophobe component. Examples 39 and 40 pertain to the polyurethane comb polymers of Examples 13 and 14 respectively. Example 41 pertains to a polyurethane which is the reaction product of 196.09 gms. (0.0222 moles) of PEG 8000, having a weight average molecular weight of 8,844, reacted with 3.91 gms. (0.0225 moles) TDI, using 0.30 gms. phenyl mercuric acetate catalyst, for one hour at 85° C. and continued overnight at approximately 70° C.

TABLE 6

Example	Examples 39-41	
	Polyurethane	2% Brookfield Viscosity
39	Example 13	44
40	Example 14	184
41	Control <sup>1</sup>	14

<sup>1</sup> - PEG 8000/TDI polyurethane having a calculated weight average molecular weight of approximately 670,000

What is claimed is:

1. A comb polymer comprising a water-soluble polyurethane containing the repeating units:



wherein:

X is the residue of an organic polyisocyanate;

Y is the residue of a polyethylene glycol homopolymer or copolymer with up to 50 mole percent C<sub>3</sub> to

C<sub>3</sub> polyoxyalkylene, or the monomeric equivalent of said polyethylene glycol;

Z is the residue of a hydrophobe reactant containing a monovalent hydrophobic group providing a molar volume contribution of at least about 130 cc/mole;

b is at least about 2;

c is at least about 2;

m is 0 or 1;

a' is such that

$$\frac{a' + mc}{b + c}$$

is between about 0.50 to about 1.25 and sufficient to provide a polymer molecular weight of at least about 10,000; and wherein:

- (1) the polymer has at least one Z unit separated from each end of the polymer by at least one X unit; and
- (2) the hydrophilic/lipophilic balance of the polymer is between about 14 to about 19.5.

2. The polymer of claim 1 wherein said polyisocyanate has the structure:



wherein R<sub>1</sub> is an alkylene, cycloalkylene or arylene.

3. The polymer of claim 2 wherein said polyisocyanate is toluene diisocyanate, methylene dianiline diisocyanate or isophorone diisocyanate.

4. The polymer of claim 1 wherein said polyethylene glycol is a homopolymer having a molecular weight of up to about 14,000.

5. The polymer of claim 1 wherein the molar volume contribution of said monovalent hydrophobic group is at least about 190 cc/mole.

6. The polymer of claim 1 wherein said monovalent hydrophobic group is an unsubstituted or halo substituted hydrocarbon radical having at least 8 carbon atoms.

7. The polymer of claim 6 wherein said hydrocarbon radical has at least 12 carbon atoms.

8. The polymer of claim 7 wherein said hydrocarbon radical is an alkyl or aralkyl having from about 14 to about 16 carbon atoms.

9. The polymer of claim 8 wherein the said hydrocarbon radical is nonylphenyl, n-tetradecyl or n-hexadecyl.

10. The polymer of claim 1 wherein said polyurethane has terminal hydroxyl groups.

11. The polymer of claim 1 wherein m is 1 and said polyurethane has the formula:

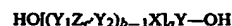


wherein

b' is the average number of polyethylene glycol residues per hydrophobe residue; and

c, X, Y and Z are as defined previously.

12. The polymer of claim 1 wherein m is 0 and said polyurethane has the formula:



wherein

a, b, X and Z are as defined previously

c' is the average number of monovalent hydrophobic group per polyethylene glycol repeating unit; and

Term	Documents
(25 AND 28).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	2
(L25 AND L28).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	2

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[Previous Page](#)

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1. An RCE (paper 13) has been filed on March 11, 2003.
2. Claims being examined are 2-8, 10, 11 and 13.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claim 7 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 is indefinite in containing abbreviations.

Abbreviations in this claim need to be removed.

Claim 7 is also indefinite in containing abbreviations.

5. Objection to claims 2-6, 8, 10 and 11 (see item 5) of prior office action (paper 8)

is now withdrawn

Rejection of claims 12 is (item 6 of same office action) is moot, since that claim is

cancelled.

6. Claims 2, 3, 7 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated

by Hermann et al (USP 3477986).

(Hermann is of record on PTO-1449, paper 5).

Hermann discloses polyamides stabilized with a copper compound and a

phosphonium halide (abstract). Polyamides include polycaprolactum (col. 4, lines 16-

17). Suitable copper compounds are listed in col. 2, line 71 to col. 3, line 6. Suitable

halogen-containing aromatic compounds are given in col. 2, lines 23-63.

Above claims therefore lack novelty.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 10. Document ID: US 6582761 B1

L7: Entry 10 of 20

File: USPT

Jun 24, 2003

US-PAT-NO: 6582761

DOCUMENT-IDENTIFIER: US 6582761 B1

TITLE: METHOD OF PRODUCTION OF COMPOSITED PARTICLE, COMPOSITED PARTICLE PRODUCED BY THIS METHOD AND AQUEOUS DISPERSION FOR CHEMICAL MECHANICAL POLISHING CONTAINING THIS COMPOSITED PARTICLE, AND METHOD OF PRODUCTION OF AQUEOUS DISPERSION FOR CHEMICAL MECHANICAL POLISHING

DATE-ISSUED: June 24, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nishimoto; Kazuo	Tokyo			JP
Hattori; Masayuki	Tokyo			JP
Kawahashi; Nobuo	Tokyo			JP

US-CL-CURRENT: 427/203; 427/180, 427/222, 428/403, 428/405

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 11. Document ID: US 6579153 B2

L7: Entry 11 of 20

File: USPT

Jun 17, 2003

US-PAT-NO: 6579153

DOCUMENT-IDENTIFIER: US 6579153 B2

TITLE: Aqueous dispersion for chemical mechanical polishing and chemical mechanical polishing process

DATE-ISSUED: June 17, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Uchikura; Kazuhito	Tokyo			JP
Motonari; Masayuki	Tokyo			JP
Hattori; Masayuki	Tokyo			JP
Kawahashi; Nobuo	Tokyo			JP

US-CL-CURRENT: 451/41; 438/692, 451/36

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KMC

☐ 12. Document ID: US 6485703 B1

Application/Control Number: 09/807,662

Art Unit: 1711

U. K. Rajguru/mn  
June 2, 2003

L7: Entry 12 of 20

File: USPT

Nov 26, 2002

US-PAT-NO: 6485703

DOCUMENT-IDENTIFIER: US 6485703 B1

TITLE: Compositions and methods for analyte detection

DATE-ISSUED: November 26, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cote ; Gerard L.	College Station	TX		
Pishko; Michael V.	College Station	TX		
Sirkar; Kaushik	College Station	TX		
Russell; Ryan	College Station	TX		
Anderson; Richard Rox	Lexington	MA		

US-CL-CURRENT: 424/9.1; 424/9.6, 424/9.8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

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☐ 13. Document ID: US 6475253 B2

L7: Entry 13 of 20

File: USPT

Nov 5, 2002

US-PAT-NO: 6475253

DOCUMENT-IDENTIFIER: US 6475253 B2

TITLE: Abrasive article and method of making

DATE-ISSUED: November 5, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Culler; Scott R.	Burnsville	MN		
Gagliardi; John J.	Hudson	WI		
Larkey; Thomas W.	Hugo	MN		
Larson; Eric G.	Lake Elmo	MN		
Martin; Larry L.	Maplewood	MN		
Nelson; Jeffrey W.	Bayport	MN		

US-CL-CURRENT: 51/295; 428/323, 51/297, 51/298

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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☐ 14. Document ID: US 6407006 B1

L7: Entry 14 of 20

File: USPT

Jun 18, 2002

US-PAT-NO: 6407006

DOCUMENT-IDENTIFIER: US 6407006 B1

TITLE: Method for integrated circuit planarization

1. An RCE (paper 13) has been filed on March 11, 2003.
2. Claims being examined are 2-8, 10, 11 and 13.
3. The text of those sections of Title 35, U.S.C. Code not included in this action can be found in a prior Office action.
4. Claim 7 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

~~Claim 7~~ is also indefinite in containing abbreviations.

Abbreviations in this claim need to be removed.

Claim 7 is also indefinite in containing abbreviations.

5. Objection to claims 2-6, 8, 10 and 11 (see item 5 of prior office action (paper 8)) is now withdrawn

Rejection of claims 12 is (item 6 of same office action) is moot, since that claim is cancelled.

6. Claims 2, 3, 7 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated

by Hermann et al (USP 3477986).

(Hermann is of record on PTO-1449, paper 5).

Hermann discloses polyamides stabilized with a copper compound and a

phosphonium halide (abstract) polyamides include polycaprolactum (col. 4, lines 16-17).

Suitable copper compounds are listed in col. 2, line 71 to col. 3, line 6. Suitable

halogen-containing aromatic compounds are given in col. 2, lines 23-63.

Above claims therefore lack novelty.



DATE-ISSUED: June 18, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Levert; Joseph A	Santa Cara	CA		
Towery; Daniel Lynne	Santa Clara	CA		
Endisch; Denis	Cupertino	CA		

US-CL-CURRENT: 438/761; 100/211, 257/E21.243, 438/762, 438/763

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 15. Document ID: US 6354929 B1

L7: Entry 15 of 20

File: USPT

Mar 12, 2002

US-PAT-NO: 6354929

DOCUMENT-IDENTIFIER: US 6354929 B1

TITLE: Abrasive article and method of grinding glass

DATE-ISSUED: March 12, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Adefris; Negus B.	Burnsville	MN		
Carpentier; Louis R.	Eagan	MN		
Christianson; Todd J.	Oakdale	MN		
Goers; Brian D.	Minneapolis	MN		
Mujumdar; Ashu N.	Woodbury	MN		
Palmgren; Gary M.	Lake Elmo	MN		
Park; Soon C.	Woodbury	MN		

US-CL-CURRENT: 451/527; 451/530, 51/298

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMIC

☐ 16. Document ID: US 6194317 B1

L7: Entry 16 of 20

File: USPT

Feb 27, 2001

US-PAT-NO: 6194317

DOCUMENT-IDENTIFIER: US 6194317 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Method of planarizing the upper surface of a semiconductor wafer

DATE-ISSUED: February 27, 2001

## INVENTOR-INFORMATION:

Art Unit: 1711

Lee discloses polyamide copolymers. In col. 12, line 12, chloroparaffins are

disclosed as an additive for flameproofing.

Rody discloses light stabilizers for plastics. Organic phosphates are used as one of suitable stabilizers (col. 63, lines 41-44).

Therefore it would have been obvious to add to the moldings of Hermann, (a)

phosphate/s of Watanabe for imparting flame retardancy and impact strength, (b)

halogen substituted compound of Giftsman for stabilization, (c) chloroparaffin or lee to

enhance flame retardancy and (d) organic phosphates of Rody to impart synergistic

effect in stabilization.

It is noted that prior art does not mention preparation of a master bath (of instant

claim 8). It is the examiner's position that use of master batch is a well-known method

in the art in order to control precisely the addition of small amounts of ingredients.

Claim 8 therefore carries no patentably-distinguishable features.

7. Claims 2, 3, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Hermann et al (USP 3477986).

Disclosure of Hermann is presented earlier.

It could have been obvious to follow teachings of Hermann to arrive at instant

invention.

8. Claim 4, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hermann et al (USP 3477986) as applied to claim 13 above, and further in view of

Watanabe et al (USP 5266618), Giftsman (EP 390277), Lee (USP 3865792) and Rody

et al (USP 4200026).

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kaisaki; David A.	St. Paul	MN		
Kranz; Heather K.	Blaine	MN		
Wood; Thomas E.	Stillwater	MN		
Hardy; L. Charles	St. Paul	MN		

US-CL-CURRENT: 438/692; 438/633, 438/693

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 17. Document ID: US 5584146 A

L7: Entry 17 of 20

File: USPT

Dec 17, 1996

US-PAT-NO: 5584146

DOCUMENT-IDENTIFIER: US 5584146 A

TITLE: Method of fabricating chemical-mechanical polishing pad providing polishing uniformity

DATE-ISSUED: December 17, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Shamouillan; Shamouil	San Jose	CA		
Clark; Daniel O.	Pleasanton	CA		

US-CL-CURRENT: 51/293; 451/285, 451/41

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 18. Document ID: US 5549961 A

L7: Entry 18 of 20

File: USPT

Aug 27, 1996

US-PAT-NO: 5549961

DOCUMENT-IDENTIFIER: US 5549961 A

\*\* See image for Certificate of Correction \*\*

TITLE: Abrasive article, a process for its manufacture, and a method of using it to reduce a workpiece surface

DATE-ISSUED: August 27, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Haas; John D.	Woodbury	MN		
Christianson; Todd J.	Oakdale	MN		
Bruxvoort; Wesley J.	Woodbury	MN		

US-CL-CURRENT: 428/143; 428/328, 428/329, 428/331, 51/295, 51/306, 51/307, 51/308, 51/309

(Gitsman and Rody have been cited in earlier office actions).

Disclosure of Hermann is presented earlier. ~~Hermann~~ does not mention specific compounds of above claims. ~~Watanabe~~ discloses resin composition. One suitable resin is a polyamide (col. 3, line 19). A phosphorus compound such as tris(tri-bromoneopentyl) phosphate (of instant claim 4) is used (col. 5, lines 34-35).

(Gitsman) discloses polyamide composition containing a halogen substituted organic compound. Such compounds are halogen-substituted epoxy and styrene oligomers or polymers (p. 2, lines 20-24).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to U.K. Rajguru whose telephone number is 703-308-3224. The examiner can normally be reached on Monday-Friday from 9:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 703-308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-

0661.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 19. Document ID: US 5533923 A

L7: Entry 19 of 20

File: USPT

Jul 9, 1996

US-PAT-NO: 5533923

DOCUMENT-IDENTIFIER: US 5533923 A

TITLE: Chemical-mechanical polishing pad providing polishing uniformity

DATE-ISSUED: July 9, 1996

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Shamouilian; Shamouil	San Jose	CA		
Clark; Daniel O.	Pleasanton	CA		

US-CL-CURRENT: 451/41; 451/36, 451/449, 451/532

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 20. Document ID: US 5453312 A

L7: Entry 20 of 20

File: USPT

Sep 26, 1995

US-PAT-NO: 5453312

DOCUMENT-IDENTIFIER: US 5453312 A

\*\* See image for Certificate of Correction \*\*

TITLE: Abrasive article, a process for its manufacture, and a method of using it to reduce a workpiece surface

DATE-ISSUED: September 26, 1995

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Haas; John D.	Woodbury	MN		
Christianson; Todd J.	Oakdale	MN		
Bruxvoort; Wesley J.	Woodbury	MN		

US-CL-CURRENT: 428/143; 428/328, 428/329, 428/331, 428/932, 51/293, 51/304, 51/305

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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Application/Control Number: 09/807,662

Art Unit: 1711

U. K. Rajguru/mn  
June 2, 2003

Term	Documents
POLISHING	132781
POLISHINGS	150
PAD	360279
PADS	194816
(1 AND (POLISHING ADJ PAD) AND 5).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	20
(L1 AND L5 AND POLISHING PAD).USPT,PGPB,JPAB,EPAB,DWPI,TDBD.	20

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1. An RCE (paper 13) has been filed on March 11, 2003.

2. Claims being examined are 2-8, 10, 11 and 13.

3. The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

4. ~~Claim 13 is~~ rejected under 35 U.S.C. 112, second paragraph, as being indefinite

for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention.

Claim 13 is indefinite because it requires a polyamide which is to be selected from a group of amides and a stabilizer. The stabilizer is not a polyamide. Format of this claim needs to be revised. Furthermore abbreviations in this claim need to be removed.

5 to 8. . . . please see yellow pages

9. - Any inquiry concerning this communication or earlier communications from the

examiner should be directed to U.K. Rajguru whose telephone number is 703-308-

3224. The examiner can normally be reached on Monday-Friday from 9:30 am to 6:00

pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, James J. Seidleck can be reached on 703-308-2462. The fax phone

numbers for the organization where this application or proceeding is assigned are 703-

872-9310 for regular communications and 703-872-9311 for After Final

communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-308-

0661.



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L7: Entry 1 of 20

File: PGPB

Jun 19, 2003

PGPUB-DOCUMENT-NUMBER: 20030113509

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030113509 A1

TITLE: Abrasive article for the deposition and polishing of a conductive material

PUBLICATION-DATE: June 19, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Lugg, Paul S.	Woodbury	MN	US	

US-CL-CURRENT: 428/137; 428/141

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC
Draw Desc	Image										

☐ 2. Document ID: US 20030060138 A1

L7: Entry 2 of 20

File: PGPB

Mar 27, 2003

PGPUB-DOCUMENT-NUMBER: 20030060138

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030060138 A1

TITLE: Polishing pad for semiconductor wafer and polishing process using thereof

PUBLICATION-DATE: March 27, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hasegawa, Kou	Mie		JP	
Hosaka, Yukio	Mie		JP	

US-CL-CURRENT: 451/41

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC
Draw Desc	Image										

☐ 3. Document ID: US 20020173231 A1

L7: Entry 3 of 20

File: PGPB

Nov 21, 2002

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication from the examiner should be directed to U.K. Rajguru whose telephone number is 703-308-3224. The examiner can generally be reached on Monday-Friday 9:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 703-308-2462. The fax phone numbers for the organization where this application is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is 703-308-0661.

U.K. Rajguru/dh  
May 27, 2003

PGPUB-DOCUMENT-NUMBER: 20020173231  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020173231 A1

TITLE: Polishing pad for semiconductor wafer and laminated body for polishing of semiconductor wafer equipped with the same as well as method for polishing of semiconductor wafer

PUBLICATION-DATE: November 21, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Hasegawa, Kou	Mie		JP	

US-CL-CURRENT: 451/6; 451/41, 451/533

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC
Draw	Desc	Image									

☐ 4. Document ID: US 20020128340 A1

L7: Entry 4 of 20

File: PGPB

Sep 12, 2002

PGPUB-DOCUMENT-NUMBER: 20020128340  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020128340 A1

TITLE: Methods and compositions for ink jet printing of pressure sensitive adhesive patterns or films on a wide range of substrates

PUBLICATION-DATE: September 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Young, James K.	Austin	TX	US	
Kolb, Brant U.	Afton	MN	US	
Everaerts, Albert I.	Oakdale	MN	US	
Eliason, Kevin M.	Forest Lake	MN	US	
Eitzman, Diana M.	Lake Elmo	MN	US	
Chen, Kejian	Woodbury	MN	US	
Banovetz, John P.	Minneapolis	MN	US	
Anderson, Gregory J.	Stillwater	MN	US	

US-CL-CURRENT: 522/1; 347/102, 347/107, 427/466, 427/510, 427/511, 427/516, 428/343, 428/345, 522/120, 522/178, 522/181, 522/182, 522/77, 522/81, 522/83

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw	Desc	Image								

☐ 5. Document ID: US 20020042200 A1

L7: Entry 5 of 20

File: PGPB

Apr 11, 2002

PGPUB-DOCUMENT-NUMBER: 20020042200  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20020042200 A1

*please return these pages*

1. An RCE (paper 13) has been filed on March 11, 2003.
2. Claims being examined are 2-8, 10, 11 and 13.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claim 7 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

~~Claim 7 is also indefinite in containing abbreviations.~~

Abbreviations in this claim need to be removed.

Claim 7 is also indefinite in containing abbreviations.

5. ~~Objection to claims 2-6, 8, 10 and 11 (see item 5) of prior office action (paper 8)~~

is now withdrawn

Rejection of claims 12 is (item 6 of same office action) is moot, since that claim is

~~cancelled.~~

6. Claims 2, 3, 7 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated

by Hermann et al (USP 3477986).

(Hermann is of record on PTO-1449, paper 5).

Hermann discloses polyamides stabilized with a copper compound and a

phosphonium halide (abstract). polyamides include polycaprolactum (col. 4, lines 16-17).

Suitable copper compounds are listed in col. 2, line 71 to col. 3, line 6. Suitable

halogen-containing aromatic compounds are given in col. 2, lines 23-63.

Above claims therefore lack novelty.

TITLE: Method for conditioning polishing pads

PUBLICATION-DATE: April 11, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Fawcett, Clyde	Claymont	DE	US	

US-CL-CURRENT: 438/692

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Drawn Desc	Image								

KWWC

☐ 6. Document ID: US 20020026752 A1

L7: Entry 6 of 20

File: PGPB

Mar 7, 2002

PGPUB-DOCUMENT-NUMBER: 20020026752

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020026752 A1

TITLE: ABRASIVE ARTICLE AND METHOD OF MAKING

PUBLICATION-DATE: March 7, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
CULLER, SCOTT R.	BURNSVILLE	MN	US	
GAGLIARDI, JOHN J.	HUDSON	WI	US	
LARKEY, THOMAS W.	HUGO	MN	US	
LARSON, ERIC G.	LAKE ELMO	MN	US	
MARTIN, LARRY M.	MAPLEWOOD	MN	US	
NELSON, JEFFREY W.	BAYPORT	MN	US	

US-CL-CURRENT: 51/298, 205/109, 205/110, 428/325, 428/328, 428/329, 428/331, 451/533, 451/539, 51/308, 51/309

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Drawn Desc	Image								

KWWC

☐ 7. Document ID: US 20020010232 A1

L7: Entry 7 of 20

File: PGPB

Jan 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020010232

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020010232 A1

TITLE: Composition for polishing pad and polishing pad using the same

PUBLICATION-DATE: January 24, 2002

## INVENTOR-INFORMATION:

Art Unit: 1711

Lee discloses polyamide copolymers in col. 12, line 12, chloroparaffins are

disclosed as an additive for flameproofing.

Rody discloses light stabilizers for plastics. Organic phosphates are used as one of suitable stabilizers (col. 63, lines 41-44).

Therefore it would have been obvious to add to the moldings of Hermann, (a)

phosphate/s of Watanabe for imparting flame retardancy and impact strength, (b) halogen substituted compound of Hermann for stabilization, (c) chloroparaffin of Rody to enhance flame retardancy and (d) organic phosphates of Rody to impart synergistic effect in stabilization.

It is noted that prior art does not mention preparation of a master bath (of instant claim 8). It is the examiner's position that use of master batch is a well-known method in the art in order to control precisely the addition of small amounts of ingredients.

Claim 8 therefore carries no patentably distinguishable features.

7. Claims 2, 3, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hermann et al (USP 3477986).

Disclosure of Hermann is presented earlier.

It could have been obvious to follow teachings of Hermann to arrive at instant

invention.

8. Claims 4, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hermann et al (USP 3477986) as applied to claim 13 above, and further in view of

Watanabe et al (USP 5266618), Giftsman (EP 390277), Lee (USP 3865792) and Rody

et al (USP 4200026).

8, 10, 11

NAME	CITY	STATE	COUNTRY	RULE-47
Ogawa, Toshihiro	Tokyo		JP	
Hasegawa, Kou	Tokyo		JP	
Kawahashi, Nobuo	Tokyo		JP	

US-CL-CURRENT: 523/448

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 8. Document ID: US 20010036749 A1

L7: Entry 8 of 20

File: PGPB

Nov 1, 2001

PGPUB-DOCUMENT-NUMBER: 20010036749  
PGPUB-FILING-TYPE: new  
DOCUMENT-IDENTIFIER: US 20010036749 A1

TITLE: Apparatus and methods for integrated circuit planarization

PUBLICATION-DATE: November 1, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Lever, Joseph A.	Santa Clara	CA	US	
Towery, Daniel Lynne	Santa Clara	CA	US	
Endisch, Denis	Cupertino	CA	US	

US-CL-CURRENT: 438/758

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 9. Document ID: US 20010008828 A1

L7: Entry 9 of 20

File: PGPB

Jul 19, 2001

PGPUB-DOCUMENT-NUMBER: 20010008828  
PGPUB-FILING-TYPE: new-utility  
DOCUMENT-IDENTIFIER: US 20010008828 A1

TITLE: Aqueous dispersion for chemical mechanical polishing and chemical mechanical polishing process

PUBLICATION-DATE: July 19, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Uchikura, Kazuhito	Tokyo		JP	
Motonari, Masayuki	Tokyo		JP	
Hattori, Masayuki	Tokyo		JP	
Kawahashi, Nobuo	Tokyo		JP	

US-CL-CURRENT: 451/41; 51/307

*Gijsman*

(Gijsman and Rody have been cited in earlier office actions).  
Disclosure of Hermann is presented earlier // Hermann does not mention specific compounds of above claims. Watanabe discloses resin composition. One suitable resin is a polyamide (col. 3, line 19). A phosphorus compound such as tris(tri-bromoneopentyl) phosphate (of instant claim 4) is used (col. 5, lines 34-35).  
Gijsman discloses polyamide composition containing a halogen substituted organic compound such compounds are halogen-substituted epoxy and styrene oligomers or polymers (p. 2, lines 20-24).

9. Any inquiry concerning this communication or earlier communications from the

examiner should be directed to U.K. Rajguru whose telephone number is 703-308-

3224. The examiner can normally be reached on Monday-Friday from 9:30 am to 6:00

pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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numbers for the organization where this application or proceeding is assigned are 703-

872-9310 for regular communications and 703-872-9311 for After Final

communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-308-

0661.